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AUTHOR Malugani, Maria Dolores

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ABSTRACT

The Inter-American Institute of Agricultural Sciences (IICA) is a specialized agency of the Organization of American States, devoted to the promotion of inter-american solidarity through leadership, institutional cooperation and multinational efforts. The programs for the development of the library and documentation services of the Library and Documentation Service, at an inter-american level are carried out on the basis of five main activities: (1) Documentation activities, particularly in the field of bibliography, standardization, reproduction of documents and communications; (2) Training courses for agricultural librarians; (3) Consultation services for member countries of the Organization of American States; (4) Library and documentation publications program and (5) Promotion of cooperation and realization of technical meetings, seminars and roundtables, at the inter-american level. (Author/NH)

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IICA - An instrument for the development of agricultural information in Latin America

by

María Dolores Malugani, Director
Library and Documentation Service

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Inter-American Institute of Agricultural Sciences of the ~~OAS~~ - ~~IICA~~
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'Today it does not requires the vision of a spiritual seer to realize that the one single human race which populates the planet must, eventually will, converge more and more into focal centers of international administration and international culture of which we already see tentative and encouraging beginnings...'

Stanwood Cobb

I. IICA AND ITS PARTICIPATION IN LATIN AMERICAN DEVELOPMENT

Mission

The Inter-American Institute of Agricultural Sciences (IICA) is a specialized agency of the Organization of American States, devoted to the promotion of inter-american solidarity through leadership, institutional cooperation and multinational efforts (14).

To accelerate agricultural development, IICA contributes towards the strengthening of the research, educational and rural development institutions of its member countries.

Programs and services (7)

The most important accomplishments of IICA in the field or research are: 1943 - training of research workers at the graduate level; 1946 - Strengthening of national institutions of agricultural research; 1951 - introduction of research methods and training programs in institutions of higher agricultural education; 1965 - research programs in cooperation with national institutions.

Outstanding points in the field of education are the following: 1946 - establishment of the first graduate level courses at the Training and Research Center, Turrialba; 1946 - contribution towards the development of institutions of higher agricultural education; 1951 - initiation of short courses in national institutions; 1963 - establishment of cooperative programs with national institutions, at the university and postgraduate levels.

In the field of rural development, the following activities are being carried out: research and training in farm management; community development; home economics; marketing; agricultural credit; agrarian reform; resources for development; and the development of agricultural areas and regions.

These activities can be summarized as follows: 1946 - development of the rural family and the rural community; 1951 - demonstration areas; 1961 - development areas; 1963 - regional agricultural development; 1966 - development of the institutional structure in the agricultural sector.

The exchange of knowledge and experiences in the field of communication and documentation has been carried out by means of the following services and programs: library and documentation services, publication programs, training courses, organization of technical meetings, support of professional associations; and technical assistance.

Besides its basic programs, which are developed on a hemispheric scale, IICA has two supporting centers: the Training and Research Center (CEI) at Turrialba, and the Inter-American Center for Agrarian Reform and Rural Development (CIRA) in Bogotá, which serve as a basis for: the preparation of professionals in new areas of crucial importance; study of first priority problems; participation in the programs of national institutions; these Centers serve as a unifying force to provide the articulation of IICA programs and contribute to the formulation of policies and strategies for institutional development (14).

Structure of the 'new dimension' (7)

In 1962, a 'new dimension' entered the activities of IICA. The Institute was reorganized on a decentralized basis, in order to become an institution of true inter-american nature. Activities of the Training and Research Center at Turrialba were deconcentrated and a more dynamic structure was instituted, through the establishment of direct and closer contact with national problems.

At present, the organizational structure of the Institute is as follows: 1) a General Directorate for all IICA, with headquarters in San José, Costa Rica, and an Office in Washington, D. C.; 2) supporting centers: a) the Training and Research Center and its Graduate School, at Turrialba; and b) the Inter-American Center for Agrarian Reform and Rural Development, in Bogotá; 3) three permanent Regional Directorates in charge of the programs in their respective areas, are part of the structure: a) the Andean Zone, with headquarters in Lima, Perú, serves Bolivia, Colombia, Ecuador, Perú and Venezuela; b) the Northern Zone, located in Guatemala City, serves México, Central America, Panamá and the Greater Antilles; c) the Southern Zone, headquartered in Montevideo, Uruguay, serves Argentina, Brazil, Chile, Paraguay, and Uruguay; 4) in almost all the countries there is an Official Representative of IICA, with the purpose of maintaining close contact with each member country.

Inter-American and international cooperation (7)

Since the introduction of the 'new dimension', the Institute has developed great activity in the establishment of a real program of cooperative agreements and contracts with international organizations and national insti-

tutions.

A network of cooperative agreements which have broadened the scope of action of IICA has been established. In many cases the resources thus obtained have contributed towards the reinforcement or strengthening of its programs and to insure better contacts with member countries and their institutions.

At the national level, cooperative programs with the greater part of the Latin American countries, in the fields of research, teaching and rural development, are maintained. In regards to international organizations, cooperative agreements have been signed with: Agency for International Development (AID), American International Association for Economic and Social Development (AIA), Agricultural Development Council (ADC), United Nations Educational, Scientific and Cultural Organization (UNESCO), Institute of Nutrition of Central America and Panama (INCAP), Inter-American Development Bank (BID), United States Atomic Energy Commission (USAEC), Inter-American Committee for Agricultural Development (CIDA), Food and Agriculture Organization of the United Nations (FAO), Central America University Council (CSUCA), etc.

There are also programs that are carried out with the support and cooperation of philantropic institutions, particularly the Rockefeller Foundation, Kellogg Foundation, Franklin Book Inc., etc.

On the other hand, multinational or regional cooperative programs are being carried out, such as Executive Commission of the Plan for the Economic Rural Recovery of the Cacao Crop (Comissão Executiva do Plan da Recuperação Econômico-Rural da Lavoura do Cacaueiro (CEPLAC), Regional Cooperative Program for Agricultural Research in Central America and Panama, the Program for the Development of the South American Tropics, Inter-American Program for the Development of Agricultural Libraries (PIDBA), etc.

A look into the future

In 1969, in his address to the Board of Directors of IICA, former Director Armando Samper said that 'IICA looks at its past with satisfaction and towards its future with confidence' (44).

In this decade, the seventies, IICA enters a new period of change: major emphasis will be placed in the full accomplishment of IICA's functions as a 'specialized agency of the inter-american system to serve the integral development of agriculture through the strengthening and integral development of agriculture, the strengthening and development of national institutions serving the agricultural sector' (1).

Within this frame of reference, documentation and information services of IICA will reach a true hemispheric dimension.

'There is no country, however underdeveloped, that can afford not to do research'

Nehru

II. AGRICULTURAL DOCUMENTATION FOR DEVELOPMENT

The establishment and adequate maintenance of an information and documentation system is one of the basic foundations upon which integral planning and social and economic development of a nation must rest.

As stated by Sandoval:

> 'modern work is governed by competition, industrial enterprises base their prosperity on the systems of specialized information. A developing nation or region is nothing else but an enterprise in unfair struggle due to the lack of adequate foundations; instruments for competition are provided by scientific and technological information' (45).

Industrial circles consider information a matter of the utmost importance for the advancement of technology.

As emphasized by Swanson, investments in this matter must be large. In 1965 the United States of America allocated over 200 million dollars in its annual budget for the storage and recuperation of information in science and technology. By 1967 it was estimated that the costs of automation of data processing in the federal systems of information (salaries, services, rent, purchase, maintenance, etc.) reached $1.292 millions (45).

The agricultural sector constitutes an essential source of riches for the economic development of Latin America; as so adequately expressed by Samper, 'agriculture is the Tendon of Achilles of economic development' (43).

In Latin America, the quality or lack of scientific and technical information systems in general, and agricultural in particular, can serve to measure the degree of development of the different countries of the hemisphere.

Latin American countries have discovered this reality and have begun to give the necessary support for the establishment of technical and scientific information centers at the national level. This tendency is also evident in the field of agricultural sciences, through the creation of national libraries and the proliferation of documentation centers: for the planning of research and agricultural development.

III. IICA AND THE ADVENT OF AGRICULTURAL DOCUMENTATION

A study of the origins and historical evolution of agricultural library and documentation services in Latin America shows that, since its early creation, IICA became markedly interested in the initiation of programs for the improvement of libraries, documentation, and communications in the field of agriculture. As a part of the regular programs of IICA the first serious study to investigate the status of agricultural library services and information was planned and carried out with the support of the Rockefeller Foundation; between the years of 1948 and 1951, Samper and Gropp visited libraries, documentation centers, educational institutions, agricultural research and extension institutions, with the purpose of becoming acquainted witn the existing bibliographical resources of libraries in agriculture and in related sciences, and the needs of information expressed by research workers, educators and other specialists (47,48).

The Orton Memorial Library, Turrialba, 1946

The Orton Memorial Library, was established jointly with the creation of the Institute, in 1946. Since its beginning, the Library had the assistance of qualified professional personnel and was organized according to modern library techniques. Since its early years, the library offered efficient reference services and orientation to readers on the use of the library. By that time, concern and interest in projecting the services of the library to all of Latin America became evident. Training of national librarians was initiated, and extensive bibliographies on basic crops such as coffee, cacao and corn, were compiled; materials for courses on the use of the library, were prepared, as well as bibliographical standards and reference repertoires; and projects and programs of Latin-American scope were planned.

1962 the Library became a 'Library and Documentation Service', the activities of which are detailed further on (p.6).

The Scientific Communications Service, Turrialba, 1949

The study made by Shaw, Samper and Gropp allowed the identification and the search of solutions for some of the problems of scientific agricultural information. Based on the recommendations of this study, the Scientific Communications Service of IICA was created. Through this Scientific Communications Service, the first systematic documentation and communication activities were initiated: publication of a quarterly scientific journal, compilation of short bibliographies on specific subjects, photocopy and microfilm services, exchange coupons, preparation of standards for the preparation of bibliographies of scientific articles, publications program, improvement of library and bibliographical services, special projects in cooperation with other agencies (34).

Since then, IICA became the leader in the development of scientific communications and information, at an inter-american level, for which it is still responsible, through: (14)

1. Exchange of knowledge and experiences
2. Facilities for library, documentation and communication services
3. Production of scientific and technical publications
4. Programs for the improvement of libraries and documentation
5. Support of professional associations of research workers, educators and librarians
6. Organization and promotion of meetings of librarians, documentalists, educators, communicators.

IV. THE DOCUMENTATION AND INFORMATION SYSTEM OF IICA

The permanent expansion of the scope of action of the programs and services of IICA and its internal structure, have led to the present network of IICA units spread on a continental scale.

These developments have demanded the accompanying expansion and proliferation of library or documentation nuclei of IICA to a degree that, at present one can say to some extent that there exists a 'documentation and information system of IICA'.

Following is the description of the different documentation nuclei and other resources that configure the system (Table I).

1. Library and Documentation Service, IICA-CEI, Turrialba, Costa Rica, 1962.

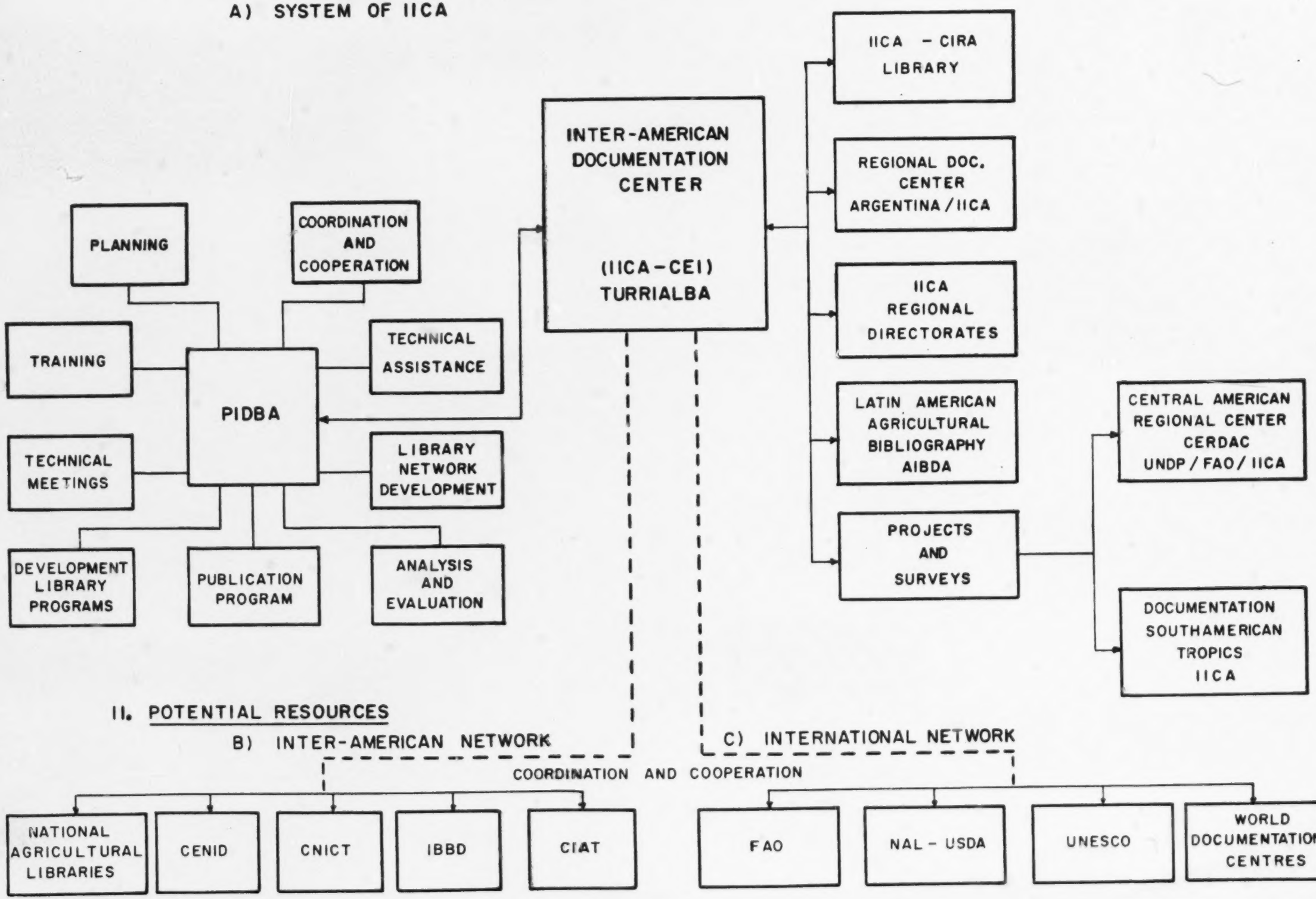
The Library and Documentation Service is the result of the unification of the functions previously carried by the Orton Memorial Library and the Scientific Communications Service, both mentioned previously.

In 1962, the activities carried out by the Scientific Communications Service were assigned to the Orton Memorial Library, which then became the present Library and Documentation Service.

In undertaking this responsibility, the Library and Documentation Service became the first library to provide documentation services in the field of agricultural sciences, at an inter-american level.

By this time and in a progressive and consistent manner, the Library and Documentation Service had increased its collections, personnel and library and documentation services; it continued to offer technical assistance to libraries, by mail, and developed a limited program of preparation of useful reference works for the community of libraries and

TABLE I. SCHEME OF THE SYSTEM OF DOCUMENTATION AND INFORMATION OF THE IICA



specialists of Latin America.

Projection of extra-mural programs

The year 1964 marks a key date in the evolution of the philosophy and introduction of new programs in the Library and Documentation Service. A vigorous policy to channel the efforts of the Library and Documentation Service towards the development of extramural programs, which to date were carried out in a limited way, is initiated. The structure of the courses for the training of agricultural librarians is reorganized, fellowships are instituted and a budget to insure the regular development of these courses is alloted; the series of publications 'Bibliotecología y Documentación' and 'Boletín para Bibliotecas Agrícolas' are created; a programs of visits to observe and study agricultural libraries of Latin America is planned; bibliographical production activities, reference materials and publications are strengthened.

In 1965, the reappearance of the International Association of Agricultural Librarians and Documentalists (AIBDA) is promoted, and the association receives economic support from the Rockefeller Foundation to re-initiate its activities, in a regular way, in 1966.

Since 1965, technical assistance services were initiated (18) through the direct assistance for the organization and administration of libraries and documentation services.

By 1967, extramural programs reach a new peak with the initiation of activities of the Inter-American Program for the Development of Agricultural Libraries (IICA/PIDBA), which serves as coordinating agent for the programed aimed at the improvement of libraries and documentation in all Latin America, carried out by IICA-CEI, IICA-CIRA, and the three Regional Directorates of IICA (17, 26, 30, 41).

In summary, the programs for the development of the library and documentation services of the Library and Documentation Service, at an inter-american level, are carried out on the basis of five main activities:

1. Documentation activities, particularly in the field of bibliography, standardization, reproduction of documents and communications
2. Training courses for agricultural librarians
3. Consultation services for member countries of the Organization of American States
4. Library and documentation publications program
5. Promotion of cooperation and realization of technical meetings, seminars and roundtables, at the inter-american level.

Table II shows the vital statistics of the Library and Documentation Service at the beginning of 1970, and Table III, its 'curriculum vitae'.

TABLE II

VITAL STATISTICS*

Total surface area		910 m^2
Personnel		
- Professional	5	
- Non-professional	13	
Annual circulation of publications (Out of library circulation)		17.801
Volumes		51.000
Journals		3.018
- Current		2.250
- Subscriptions		480
Bibliographical indexes and abstract journals		98

Special inter-american services:

Photocopy and Xerox services; bibliographical services; reference services; training on the use of the library; inter-library loans; publications exchange program; re-distribution of duplicates program.

Professional personnel

María Dolores Malugani, M.L.S., Director
Alfredo Alvear, Lic. Bibl., Head, Selection and Acquisitions
Orlando Arboleda, M.L.S., Head, Public Services
Hugo Cáceres, M.L.S., Head, Documentation Service
María José Galrao, Librarian, Head, Cataloguing and Classification

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* Library and Documentation Service, Turrialba.

TABLE III

CURRICULUM VITAE OF THE LIBRARY AND DOCUMENTATION SERVICE
: Development and Accomplishments

Mission

The accomplishments detailed below illustrate the efforts and continuity of action carried out by the Library and Documentation Service to provide assistance and attain efficiency in its operations, aimed at the contribution towards the improvement of scientific communications and support of higher agricultural education and research programs carried out by IICA in Latin America.

Leadership and catalysis

In all these activities, the Library and Documentation Service have been a pioneer, have maintained continuity of leadership and have made an accelerated increase of its collections, functions, and programs.

1946	Creation of the Library
1948	Survey of the status of scientific agricultural communications in Latin America
1949	Establishment of the Scientific Communications Service
1949-	Service of short bibliographies on specific subjects, at the inter-american level established
1949-	Reproduction of documents (photocopy, and microfilm) at the inter-american level
1951	Survey of the status of scientific agricultural communications (cont.)
1951-	Informal in-service training for agricultural librarians
1952-69	Permanent expansion of the physical facilities of the Library
1953	First Technical Meeting of Agricultural Librarians, inter-american level
1953	Establishment of the 'Bibliographical Series' on basic crops for Latin America - Coffee Bibliography and Supplements
1953	Promotion of the establishment of the International Association of Agricultural Librarians and Documentalists (AIBDA)

1954	Initiation of the Bibliographical Series on Cacao and Supplements
1958-	Initiation of formal training courses on the Use of the Library in the Graduate School
1960	Bibliographical and document reproduction services become a part of the Library and Documentation Service
1960-	Initiation of Bibliographical Series on Corn and Supplements
1962-	Initiation of regular training courses for agricultural librarians
1964-	Contribution to the Bibliographical Series on basic crops for Latin America - Bibliography on Beans and Supplements
1964	This year marks a fundamental period for the projection of extramural programs to help in the improvement of Latin American agricultural libraries
1964-	The Board of Directors of IICA approves a fellowship program for training of librarians in the Turrialba Center
1964-	Creation of the series 'Bibliotecología y Documentación' (at present 18 volumes have been published)
1964-	Creation of the quarterly 'Boletín para Bibliotecas Agrícolas'
1964-	Initiation of a regular program for the donation of duplicates to agricultural libraries of Latin America
1964-	Preparation of a preliminary program for the Library building
1964-65	Improvement of methods for the organization and administration of library operations
1964-65	Initiation of a plan of visits to study the status of agricultural libraries of Central and South America
1965-	Promotion and support of the re-establishment of AIBDA
1965-	Considerable physical expansion of the Library and Documentation Service to a wing of the main building at CEI
1965-	Initiation of direct consultation activities on the organization of agricultural libraries and documentation centers at national levels

1966	Completion of the planning program for the library building
1966-	Initiation of the 'Bibliografía Agrícola Latinoamericana' (AIBDA, associate program)
1967-	Initiation of the Inter-American Program for the Development of Agricultural Libraries (PIDBA)
1967-	Establishment of a national pilot program in Brazil, for the improvement of agricultural libraries (PIDBA/ Southern Zone, Brazil)
1967	First Round Table on the Development of Agricultural Libraries, IICA/PIDBA, Lima
1967-	Initiation of cooperative multinational projects for the preparation of instruments for bibliographical control
1968	Second Round Table of the Program for the Development of Agricultural Libraries, IICA/PIDBA, Bogotá
1968	Co-sponsor and collaborator in the Second Inter-American Meeting of Agricultural Librarians and Documentalists, Bogotá
1968	Promotion of training of agricultural librarians, on a regional basis, for the countries of the Southern Zone
1968	Establishment of contacts and cooperative projects with international and inter-american organizations (FID/CLA/EIBM/ IBBD/PAU/AIBDA)
1968-69	Study of the resources of agricultural libraries of Latin America
1969-	Third Round Table of the Program for the Development of Agricultural Libraries, IICA/PIDBA, Rio de Janeiro
1969-	Initiation of studies for the execution of automation projects
1969-	Preliminary studies for the planning of a network of agricultural information centers on an inter-american level
1969-	Further expansion of the physical plant of the Library and Documentation Service

1969 Appointment of a Committee Ad Hoc of IICA/PIDBA, to analyze automation experiences in Latin America

1970 Initiation of a UNDP/FAO/IICA study to prepare a proposal for a cooperative project for the establishment of a Regional Documentation Center for Central America - headquarters at the Library and Documentation Service

1970 Planning for the transformation of the Library and Documentation Service into an 'Inter-American Agricultural Documentation and Information Center'.

2. Inter-American Cent r for Agrarian Reform and Rural Development IICA-CIRA, Bogotá, Colombia, 1964

The Inter-American Center for Agrarian Reform and Rural Development is one of the specialized units of IICA; its library services and documentation activities began in 1964.

In these past few years it has become a representative information service, well-organized, with good collections and development of scientific documentation and communication activities. Although it still has its collections organized according to conventional methods, it has adopted an automated system through which computer-printed catalogs in twenty branches of agrarian reform and rural development have been produced. These catalogs are organized by authors, subject matter and title, and index all the collection of books, monographs, pamphlets and titles of periodical publications of the library resources of IICA-CIRA, the Colombian Agrarian Reform Institute (INCORA) and the collection of the Latin American Institute of Agricultural Marketing (ILMA), which have recently been added to the library of CIRA.

The adoption of an automated system in the collection of IICA-CIRA represents a pioneer experiment in the field of agricultural libraries of Latin America (30, 50). The system is in process of continuous development and improvement, including the initiation of cooperative activities with other libraries.

3. Inter-American Program for the Development of Agricultural Libraries (IICA/PIDBA), 1966

In 1967, the activities to assist libraries and documentation services were concentrated and systematized through the establishment of the Inter-American Program for the Development of Agricultural Libraries (IICA/PIDBA) (26).

PIDBA is a specialized instrument of IICA for everything related to the development of agricultural libraries and documentation services within IICA itself and in Latin America. The technical coordination of the Program is headquartered at Turrialba.

The general purposes of PIDBA are: to develop a hemisphere-wide action for the improvement of library and agricultural information services in Latin America; to integrate the objectives of PIDBA in the national planning processes for economic and social development; to promote the better use of human and economic resources of Latin America and those of foreign aid through the coordination and cooperation in agricultural library programs; to make possible high quality research in agricultural sciences, contributing to the development of methods for the better

organization, storage, diffusion and use of documentary resources available in Latin America; to raise the level of agricultural libraries in order that they may occupy their right place in educational, research, and rural development programs; to conduct studies that will contribute in the analysis and evaluation of basic problems affecting the progress of agricultural library and documentation services in Latin America; and, to search for problems and to apply procedures for their adequate solution.

Specific purposes are: to provide consultation services and direct technical assistance for the planning and organization of agricultural library services and information; to promote and to participate actively in the establishment and development of national agricultural library leadership; to develop an intensive program for the training of agricultural librarians and documentalists at different levels; to initiate an intensive program for the improvement of libraries of higher agricultural education and research institutions; to promote and to assist in the creation of agricultural documentation centres (or national libraries) and information systems in each of the Latin American countries; to contribute towards the establishment, coordination and strengthening of a network of leading libraries in order that they serve as regional agricultural information centres; to promote studies of cooperative national planning; to assist in the establishment and coordination of national, regional, and inter-american cooperative library projects; to promote, to conduct, and to sponsor meetings, conferences, etc., in order to stimulate a greater communication, coordination, and cooperation between librarians; to develop a program of publications on library science and agricultural documentation.

Through the activities of IICA/PIDBA and of its 'pilot nucleus', the Agricultural Libraries Program in Brazil (a program at the national level which received the financial sponsorship of the Rockefeller Foundation), many documentation activities have been carried out, such as preparation of reference works, bibliographies, compilation of basic lists of publications in Spanish and Portuguese; comprehensive catalogs of periodical publications, basic inventories of libraries and library human resources; development of cooperative programs for the exchange of publications, and reproduction of documents, etc.

The different types of activities of PIDBA are carried out on the basis of cooperative projects with national institutions or inter-american and international organizations, or in an independent manner, by the different nuclei of IICA.

PIDBA publish three regularly series for the publication of library science and agricultural literature and sponsors a regular program of meetings at the inter-american level, through its 'Round Tables'.

4. Documentation Center on Research and Higher Agricultural Education of the Southern Zone, (CEDEI), Buenos Aires, Argentina, 1969

This Center is a regional nucleus which forms part of the documentation and information system of IICA, for the Southern Zone region. The Center initiated work in January 1970, through a cooperative agreement with the College of Agronomy and Veterinary Medicine of the University of Buenos Aires and the Regional Directorate of IICA for the Southern Zone. The main objective of the Center will be the preparation of basic inventories of human, institutional, and bibliographical resources and the diffusion and exchange of information among research and agricultural education institutions of the countries of the Southern Zone (Argentina, Brazil, Chile, Paraguay, and Uruguay) and the collection and publication of documents related to research and education; the development of training courses for librarians and documentalists in included in the activities of the program. The Center has its headquarters and directorate at the College of Agronomy and Veterinary Medicine of the University of Buenos Aires (17).

5. Regional Directorate for the Andean Zone (Lima, Peru) and Regional Directorate for the Northern Zone (Guatemala City)

Regional Directorates of IICA are carrying out, in some extent, documentary activities such as the compilation of inventories of institutional and human resources in the field of research and education at the regional levels, the inventories include information relative to the countries under their sphere of action.

The Regional Directorate for the Northern Zone of IICA, with headquarters in Guatemala City, initiated, in 1970, a program of compilation of information relative to agricultural research in the Central American countries, which includes the control of research in progress and other basic inventories.

6. Program for the Development of the South American Tropic, Belem, Brazil, 1970

The Program for the Development of the South American Tropic is a multinational project administered by IICA, which includes in its objectives the initiation of documentation activities on tropical agriculture. The execution of a study for the planning, initiation and development of these activities based on a survey of the present status of library and documentation services in the countries is planned; Brazil has been selected as technical and administrative headquarters of this multinational project and its prospective documentation activities.

7. Study for the establishment of a Regional Agricultural Documentation Centre for Central America, UNDP/FAO/IICA Project, Turrialba, 1970

A cooperative study has been initiated by UNDP/FAO/IICA, for the establishment of an agricultural documentation centre to serve the development of the Central American countries. The Centre will establish its headquarters at Turrialba, Costa Rica.

8. Inter-American Association of Agricultural Librarians and Documentalists (AIBDA), Turrialba, 1966

AIBDA is an associate program of IICA. Since its reappearance in 1966, it has initiated an active plan of contributions to agricultural documentation in Latin America which includes, as basic instrument, the compilation of 'Bibliografía Agrícola Latinoamericana'; furthermore, it publishes a technical bulletin ('Boletín Técnico') and an information bulletin ('Boletín Informativo'). The Association cooperates in the development and promotion of bibliographical and documentation activities at national levels, such as national bibliographies, periodicals catalogs, reference works, basic inventories, etc. Its Work Groups contribute to the different fields of agricultural documentation. Work programs and projects are carried out in cooperation and coordination with IICA/PIDBA and the libraries and national documentation centers of Latin America.

At present the Association operates under the financial sponsorship of the Rockefeller Foundation and IICA.

The documentation and information activities developed by all the units above mentioned, that form part of the IICA system are coordinated by IICA/PIDBA. The development of cybernetic techniques which permit the centralization of the information produced in the regional or national nuclei and the production of bibliographic instruments of hemispherewide scope, are planned.

V. AGRICULTURAL DOCUMENTARY INFORMATION GENERATION AND TRANSFER

Information generation and transfer

The generation and transfer of bibliographical and documentary information produced by IICA can be grouped in the following areas:

Production of bibliographical instruments: the bibliographical series on basic crops for the economy of Latin America, such as coffee, cacao, corn, beans, and macadamia; selective or exhaustive bibliographies in specific

fields, such as agricultural education, soils, agrarian reform, animal science, etc., some of an exhaustive nature, others of a chronological, geographical or language nature, as in the case of the publication '2000 Libros en Ciencias Agrícolas en Castellano', or by type of 'materials' such as 'Indice Latinoamericano de Tesis en Ciencias Agrícolas'. The generation of this material and its diffusion is continuous, in order to satisfy the needs of the teaching and research and rural development programs of Latin America.

The Library and Documentation Service at Turrialba is carrying out a program to produce specialized bibliographies with the purpose of taking care, on a free basis, of requests from agriculturists from all Latin America.

At the Latin American level AIBDA, one of the associate programs of IICA, publishes 'Bibliografía Agrícola Latinoamericana' since 1966 and although at present it includes only about a 50% of the agricultural literature produced in Latin America, it is the most representative publication for the purpose of identifying subject matter literature on a regional interamerican level.

For further information on this type of documentary generation the work of Erickson and Malugani provides detailed data on the bibliographical production of IICA (3).

The series 'Bibliotecología y Documentación' represents the medium that has published the greater number of reference instruments on an interamerican level: bibliographies, lists of periodicals, books, theses, list of abbreviations, analytical indexes of journals, catalogs of periodical publications, etc.

The Regional Directorate for the Andean Zone of IICA (Lima, Peru) has a Textbooks and Teaching Materials Program in cooperation with the Franklin Book Programs, Inc. Through this program, financial support is offered to professors and research workers with the purpose of promoting the production of original works in Spanish and Portuguese, or translations of interest and benefit for teaching, research and scientific agricultural documentation in Latin America.

To cooperate in this efforts, the Library and Documentation Service of IICA, Turrialba, made a study and published and index of books in Spanish (or translated into Spanish) covering the decade 1959-1969. Parallel to this study, the Agricultural Library Program of Brazil, IICA Southern Zone, prepared a preliminary list of books and monographs in Portuguese.

Based on the publication of '2000 Libros en Ciencias Agrícolas en Castellano', an analysis was made which shows that the production of original books in Spanish and Portuguese, on agricultural sciences, is very limited and that the major part of these books are translations. There is general

consensus among educators, librarians and documentalists relative to the urgen need of developing more aggressive programs in this critical area of agricultural education.

In a limited way, also, a translation program is carried out, either as a part of the Textbooks and Materials Program --translation of scientific and technical articles on agriculture-- or in the field of library science and documentation itself, as is the case of the translation into Spanish and Portuguese of the 'Primer for Agricultural Libraries' published by IAALD the translation was promoted by PIDBA of IICA and published in its series 'Bibliotecología y Documentación'.

In the area of research in progress, IICA published for a short period of time, in the 1950s, the repertory 'Comunicaciones Científicas Agrícolas' which attempted control of agricultural research being done in Latin America. This publication had a short life due to the difficulties this venture encountered at that time.

At present this problem will be attacked again by the IICA through regional programs, as for instance in the Central American countries and those of southern South America (Argentina, Brazil, Chile, Paraguay, and Uruguay). IICA publishes its own research in progress in its Annual Technical Report.

The Institute has a wide program of publications which is carried out with the cooperation of all its regional or national units. Technical and scientific journals, such as 'Turrialba' which already has attained prestige and is well-known throughout the world, 'Desarrollo Rural en las Américas', 'Dasonomía Interamericana', and the bulletins 'Cacao' and 'Café' which are of international interest, are published. In the field of library science and documentation, the series 'Bibliografías', 'Boletín para Bibliotecas Agrícolas', and 'Bibliotecología y Documentación', are published regularly.

Through all its units, IICA publishes a total of 18 regular 'Official Series' which encompass the majority of the production of its staff. Another part is published in scientific and technical journals, particularly in proceedings of congresses and meetings of national, inter-american, or international character, in the field of agricultural sciences and of library science and documentation.

The production of IICA is indexed in 'Contribuciones del IICA a la Literatura de las Ciencias Agrícolas' (IICA. Bibliotecología y Documentación Nº 12, 1968). The 1970 edition includes a total close to 3000 contributions to the agricultural sciences literature.

The Institute also has a program for the exchange of publications and redistribution of duplicates, and a program for the distribution of its own publications to selected Depository Libraries.

In the area of agricultural communications --scientific, technical, and informative-- through its publications programs, IICA has been outstanding for a great activity; the work developed by the Scientific Communications Service, and the Library and Documentation Service in Turrialba, the Library and Documentation Service of IICA-CIRA, and the communications programs of the Regional Directorates and National Representations of IICA in the different Latin American countries, are well-known.

Besides the publication programs on 'communications', IICA offers courses on communications, extension, technical writing, teaching methodology, audiovisual methods, and others.

Bibliographical and documentary standardization

Scientific communications and documentation programs of IICA have made different types of efforts in the field of standardization.

During the Technical Meeting of Latin American Librarians, held at Turrialba in 1953, IICA presented a code of standards for Bibliographical references with the purpose that they serve as basic standardization instrument for Latin American agricultural libraries and specialists. These standards, approved by the participants to the Meeting, have been widely used by a large number of Latin American Agricultural Libraries and agriculturists.

In 1968, IICA considered it important to revise its own official bibliographical standards in order to reach a consensus of the opinion of the agricultural librarians and documentalists' community; a revised version of these standards was presented as a discussion document to the Second Meeting of Agricultural Librarians and Documentalists, Bogotá, 1968. To carry out this study, the cooperation of AIBDA was requested. At present these standards are in the process of final revision by the Publications Committee of IICA, and once approved will be published and widely distribute.

In the area of standardization of inter-library loans, IICA/PIDBA has prepared and distributed a code for agricultural libraries and has sponsored the translation and diffusion of the new code of inter-library loans of A.L.A.

The Second Meeting of Agricultural Librarians and Documentalists held in Bogotá issued a recommendation relative to the convenience of making a study of the classification systems used in agricultural libraries of Latin America, to find ways to favor the compatibility of systems, at least within a given country, area or region. This is a cooperative project administered by the Library Development Program of the Pan American Union.

In view of the growing interest in Latin America relative to the advances automation to be applied to library and information systems, IICA/PIDBA

included in its program for its Third Round Table (Rio de Janeiro, November 1969) the subject of automation in the agricultural libraries and documentation centers of Latin America. The participants in this meeting recommended the integration of an ad-hoc committee of IICA/PIDBA, to make a study of the automation experiences made in Latin America in the fields of science and technology, with particular attention to the analysis of aspects of compatibility of systems and the benefit to be obtained from these experiences, to avoid duplication of human efforts and financial resources.

In areas 'indirectly' related to documentation, such as training of agricultural librarians and training of users of the information, studies are being carried out to attain a certain degree of standardization in the methodology and levels of these type of courses and studies of users needs (40).

IICA/PIDBA has also initiated a study for the preparation of minimum standards for agricultural libraries in the area of higher agricultural education.

Generation and diffusion of literature on library science and documentation

Literature on library science and agricultural documentation produced in, or about, Latin America, is limited. We can say that the production of this type of literature began with the works of Shaw, Samper and Gropp (47, 48); during the last five years, a considerable increase has been noticed, and the last three years have been the most productive period.

Latin American library science and agricultural documentation has two specialized publications, issued by IICA, to spread literature in the field:

Boletín para Bibliotecas Agrícolas, v. 1- , 1964-
Quarterly.

Each issue contains at least two technical or informative articles, prepared by librarians, documentalists, or education or communication specialists. Some of these articles are reprints of materials considered of importance for the community of Latin American agricultural librarians. The bulletin includes sections on library science and documentation literature; profiles of Latin American agricultural libraries; a section on exchange of publications, and bibliographies; book reviews; news, etc.

Bibliotecología y Documentación, Turrialba, v. 1- Nº 1- 1964-
Irreg.

This series is devoted to the publication of reference tools of Latin American regional scope, basic inventories, proceedings of meetings,

materials of interest for the teaching of library science and documentation, library manuals, etc.

In a recent bibliographical research on theoretical library science and documentation literature of Latin America, made by IICA/Turrialba, over 150 works* were identified; this number is preliminary and it is estimated that once this research is completed, over 200 bibliographical references will be easily reached. This list does not include the production of reference works and other bibliographical instruments which would notably increase the volume of production, since Latin America has made the greatest efforts in the field of production of bibliographical instruments (36). A quick quantitative analysis of the above mentioned bibliography shows that the greater part of the significant theoretical literature is found in papers presented to meetings or congresses, strictly agricultural, scientific or technological, or to meetings on specific fields in which library science and documentation are dealt with (national, inter-american and international meetings). A more limited portion of this literature is published in the form of monographs or in bulletins and series, or in an independent way. The list evidences that there is only one work in book form: 'La investigación bibliográfica y la comunicación técnica', by Celestino Bonfanti. The publication of the manual 'Organización y Administración de Bibliotecas Agrícolas', a cooperative project of IICA/PIDBA, in which a selective group of cooperators are participating, is in process.

Finally, it is interesting to point out that in the literature reviewed almost a 50% of it has been produced by librarians, documentalists and agricultural specialists connected with IICA.

VI. HUMAN RESOURCES: UTILIZATION AND TRAINING

Rational utilization of the human capital

Until recently, there existed the criterion in Latin America as well as in some advanced countries, that the systematic institution of courses for the training of 'technical library assistants' for the libraries was a threat to the status of the librarian. Support of this philosophy has been, possibly, one of the important causes that have limited the raising of the professional level of the librarian, who has had to and still has to dedicate a great part of his time to routines.

In Latin America and since twenty years ago, IICA has shown its concern about the preparation of intermediate level library personnel and began to offer this kind of courses which, since 1957, have been held regularly.

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* IICA. BIBLIOTECA Y SERVICIO DE DOCUMENTACION. Literatura de bibliotecología y documentación agrícola en América Latina. Turrialba, 1970. 19 p. (Lista preliminar presentada a este Congreso)

The purpose of the Institute in initiating this venture of Latin American scope, was to make a contribution towards the more rational utilization of the scarce human resources available to manage the agricultural libraries of this continent.

Training programs for technical library assistants

An analysis of the Latin American experience relative to the formation of technical library assistants shows that agriculture is the only discipline in which the responsability to establish, develop and promote the training of this type of personnel at an inter-american level was undertaken. IICA, since mid-century, has pioneered in this field. The study made at that time showed that the realistic response to meet the needs of personnel for agricultural libraries consisted in the training of personnel that was already working and had the responsibility of managing and organizing agricultural libraries. Time has shown that, even today, almost twenty years later, the development of this type of training is still needed -Latin America has not yet produced the number of professional librarians needed-, on one hand because technical assistants are indispensable to complement librarians action with efficiency and, on the other hand, because the schools of library science have been unable, even at present, to give attention to this level of teaching or to the offering of special courses in agriculture for professional librarians.

The training initiated in the 50s at the Training and Research Center of IICA, in Turrialba, placed all their emphasis on practice and were attended of three or four students. In 1970, these courses have attained prestige in all Latin America and their participants are recognized a certain number of credits upon admission to schools of library science in the continent. The courses are offered regularly, each year, and have a six-months duration. The participants are personnel in charge of agricultural libraries as well as professional librarians. This heterogeneity constitutes one of the practical difficulties encountered in the development of these courses, which is surmounted by increasing the degree of dedication of the professors to certain groups of students. In the immediate future it is planned to offer training to librarians in both levels. Modern teaching methods (theoretical classes, audiovisual aids, laboratory practices, seminars, programmed exercises, individual research, term papers, lectures, examinations) are used in these courses. The program includes basic subjects, such as cataloguing and classification, selection and acquisition, reference and bibliography, administration and organization. Furthermore, introduction to documentation, communications for librarians, technical writing, lectures offered by agricultural specialists, and compulsory study of English, form integral part of the courses. Certain special subjects, such as planning of buildings for libraries and short courses on how to give instruction on the use of the library to students and other type of users, are offered during courses through the seminar method, which demands intensive individual participation from the students, oral expositions, preparation of audiovisual materials, teamwork, etc. At the end of the

courses, the participants are awarded a certificate of attendance.

In 1967, the IICA training programs for agricultural librarians reached new dimensions; the Program for the Development of Agricultural Libraries of Brazil was established that year, and a program of short courses, of one or two months duration, was carried out (41). By means of a cooperative agreement between the College of Agronomy and Veterinary Medicine of the University of Buenos Aires (Argentina) and the Southern Zone of IICA, in 1968 the training of librarians for the South American countries was initiated on a regional basis (17).

Through all these efforts, made by or with the cooperation of IICA, a total of close to 140 units of personnel have been trained.

As mentioned previously, IICA/PIDBA has promoted the preparation of minimum standards of quality for courses aimed at the preparation of'agricultural technical library assistants', a cooperative project with the Inter-American School of Library Science of Medellín (EIBM).

In the field of professional formation of the agricultural librarian, personnel attached to IICA have made contributions to the literature on the subject and participate in the Professional Education Committee of AIBDA.

New plans of the Library and Documentation Service of IICA, Turrialba, contemplate the initiation of training for agricultural documentalists.

Until the near past the Rockefeller Foundation has supported the inter-american courses carried out by the Institute at Turrialba as well as of those carried out on a national level in Brazil.

On the other hand, the Foundation has been a permanent source of fellowships for the training, at the postgraduate level in the United States, for the professional library staff of the Library and Documentation Service, IICA, Turrialba.

Short-term plans of IICA intend to continue promoting and cooperating in the establishment of new nuclei of training for librarians at national and regional levels - on the basis of cooperative agreements with agricultural national institutions and schools of library science of the continent. The great majority of agricultural library services are in a state of under development; the seriousness of the situation demands that the problem be attacked vigorously.

Training and studies on the consumers of information

Another of the aspects in which IICA has placed special attention since its establishment, has been that of providing the users with the necessary facilities to allow them a more rapid access to the agricultural sciences

literature. One of the ways used to reach this purpose has been to enable them to develop independence in the use of information.

Through the action of the Agricultural Graduate School of the Training and Research Center at Turrialba, the Inter-American Center for Agrarian Reform and Rural Development (IICA-CIRA), in Bogotá, and the efforts of the Regional Directorates of the Institute, contributions have been made towards the training of graduate students, research workers and professors of Latin America in the use of scientific literature through training on the use of the library, and the scientific agricultural literature, courses on technical writing and preparation of bibliographies, courses on scientific communications, and courses on teaching methodology. As a complement for the better development of these courses, different types of printed and audiovisual materials have been prepared.

To meet the needs of the consumers of information, and also with the purpose of promoting the use of literature by specialists, some efforts have been carried out in regards to studying the needs of users. The first study was carried out by Shaw, Samper and Gropp (47, 48). More recently new efforts have been made, taking as a basis the users of information on agrarian reform and rural development (30). IICA plans to award a first priority attention to the development of users studies in short-term programs.

Studies on human resources

The contacts that IICA has in all Latin America with national institutions, through its programs for the development of libraries and documentation, have permitted the execution of studies and quantitative and qualitative appraisals of the situation of the human resources which exist in the libraries and documentation services. This knowledge has been obtained through courses for librarians, visits to national institutions, surveys, compilation of directories, participation in national and regional studies on library services, and meetings and congresses of national, regional, inter-american level, or international level.

Recently, IICA/PIDBA promoted research, at the national level in Brazil and another at the inter-american level, on the quantity and quality of human resources available in Latin America for the teaching of library science and agricultural documentation (34, 42).

VII. STRATEGY FOR REGIONAL AND INTERNATIONAL DEVELOPMENT OF INFORMATION

'Systems' as a basis for the development of documentation and information

The development process of scientific documentation and information, in the whole world as well as in Latin America, is undergoing an acute phase of dispersion.

Librarians, documentalists, information scientists; programmers and systems analysts, work independently without adequate and well-planned coordination between them; furthermore, it is common to find that they are antagonistic forces within a same institution. UNESCO has clearly identified the seriousness of this problem and has publicly stated that it will exert its influence to obtain coordination and cooperation between the disciplines which are integral parts of the different aspects of the process of organization, storage, diffusion and recuperation of scientific information (49):

> 'Librarians and documentalists should join efforts in order to build-up a common discipline, covering the various aspects of information control rather than allowing it to be divided in opposing branches ... and in order to provide a proper balance among documentation, libraries, and archives'.

In other words, documentation and information must be a part of the same unit - the information sciences system.

Based on this same philosophy of unity and system --in this case in direct relation to the influence it has had on the advent of electronical techniques for the control of information-- Monge has also pointed, to the need of considering the global problem of scientific information as a whole, within which automation has its own place.

> 'Any research aimed at elucidating problems relative to the scientific information process must consider 'the system' as a whole' (27).

If we refer to the field of agricultural science and technology, Cobb states:

> 'The worldwide unity of industrial and agricultural technology gives valid grounds for the prediction that a similar world unity will eventually pervade all fields of human thought and effort' (6).

It is only within the frame of reference of 'unity', referred to by Cobb, that it will be possible to attain flexibility, compatibility, cooperation, and coordination, indispensable to carry out the ambitious cooperative ventures which are being planned for the development of information and documentation on a worldwide basis, either in the field of science and technology (UNESCO) (38) or that of the agricultural sciences (FAO) and (NAL) (2, 4).

In the specific case of the information and documentation activities convied out by the different units of IICA itself, or by cooperative and associated programs, the system functions on the basis of cooperative goodwill. At present, however, ways to insure a mechanism that will allow the system to develop with a high degree of compatibility and coordination, are being studied.

Investments in technological innovation

Investments in the automation of information systems and networks offer the most promising solutions to obtain the maximum advantages entailed by the management of large amounts of information (3).

In the case of the information system of IICA, which is composed by units spread at regional levels in Latin America, centralization and exchange of information among the different nuclei which would be attained through electronic methods, would provide a highly efficient channel both for the dissemination as well as for instant retrieval of information.

For the planning of such centralized automated system, it will be necessary to take into consideration the developments taking place -or being planned- at other regional or international levels, in order that the system be sufficiently flexible to enable it to become integrated to the field of international cooperation and coordination.

The first experiences that have taken place in Latin America, relative to automation of agricultural libraries -as has been indicated- have been promoted by IICA. In 1967, Dr. Fernando Monge, Communicator of IICA-CIRA, initiated the automation project of the Library of the Colombian Institute for Agrarian Reform (INCORA), and a year later the same system was adopted for the organization and management of the Library and Documentation Service of IICA-CIRA; in the same year, the integration of catalogs of both libraries was carried out and a revision of the system was initiated. At present, the specialized catalogs of CIRA, printed by computer, include the complete resources of the collections of CIRA and INCORA, and the collection of ILMA (which has been recently transferred to the Library of IICA-CIRA) is being incorporated to the catalogs of CIRA. The system is using close to 2000 key words; since the adoption of the system in the Library of CIRA, a program for the improvement and broadening of its potentials is maintained (30, 50).

Studies and planning have been initiated to determine methods and priorities for the application of electronical technology in the Library and Documentation Service at Turrialba.

As stated in a previous work, in which we discussed some ideas on 'automation and development of Latin America', we state again that in the final process of making a decision regarding the convenience of automating a library or information systems-

> 'it is essential to evaluate what benefits will be produced by the investments in automation in the process of accelerating the mechanisms for transfer of agricultural information and, therefore, in accelerating the development of the agriculture and the economy of our continent' (25).

An Agricultural Documentation and Information Center for Latin America

Through the library and documentation service units that are parts of the IICA own structure, and through its associated programs, the Institute has been developing action of inter-american scope. However, it is necessary to recognize that this action has not been carried out with the fullness and depth that an enterprise of this scope demands.

In this new period of change that IICA is entering in the 70s, it is planned that the Library and Documentation Service headquartered at Turrialba, assume the responsibilities of a true regional agricultural documentation and information center: 1) to provide foreign literature to serve Latin American needs, and 2) to centralize literature generated in or about Latin America. As part of this program, the foundations are being laid for the planning and establishment of an hemispheric agricultural information network, to which national agricultural libraries and documentation centers will be gradually integrated.

A documentation and information center of inter-american scope will be able to act as a 'regional bridge' to coordinate Latin America with the international systems of agricultural information and other systems -- those corresponding to related disciplines as well as to the field of science and technology in general.

It is proposed to call a conference of inter-american level to discuss the planning of the establishment of a network of agricultural information for the continent, which will include the study of the application of electronical technology and telecommunications.

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ABBREVIATIONS USED

AIBDA- Asociación Interamericana de Bibliotecarios y Documentalistas Agrícolas, Turrialba, Costa Rica.

CENID- Centro Nacional de Información y Documentación, Santiago, Chile.

CIAT- Centro Internacional de Agricultura Tropical, Palmira, Colombia.

CNICT- Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina.

FAO- Food and Agriculture Organization of the United Nations, Roma, Italia.

IBBD- Instituto Brasileiro de Bibliografia e Documentação, Rio de Janeiro, Brasil.

IICA- Instituto Interamericano de Ciencias Agrícolas de la OEA, Dirección General, San José, Costa Rica; Direcciones Regionales y Representaciones Nacionales Oficiales, diseminadas en toda América Latina.

IICA-CEI- Instituto Interamericano de Ciencias Agrícolas de la OEA, Centro de Enseñanza e Investigación, Turrialba, Costa Rica.

IICA-CIRA- Instituto Interamericano de Ciencias Agrícolas de la OEA, Centro Interamericano de Reforma Agraria y Desarrollo Rural, Bogotá, Colombia.

IICA/PIDBA- Instituto Interamericano de Ciencias Agrícolas de la OEA, Programa Interamericano de Desarrollo de Bibliotecas Agrícolas, Coordinación Técnica, Turrialba, Costa Rica.

NAL-USDA- National Agricultural Library, U.S. Department of Agriculture, Beltsville, Maryland, U.S.A.

OEA- Organización de los Estados Americanos, Secretaría General, Washington, D. C., U.S.A.

SIC- Servicio de Intercambio Científico, Turrialba, Costa Rica.

UNESCO- United Nations Educational, Scientific and Cultural Organization, París, Francia.

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